NOISE

ELEMENT

OF THE

RIO DELL

GENERAL

PLAN

NOISE ELEMENT

As described in the Government Code the Noise Element of a General Plan should include noise contours of present and projected noise levels associated with all existing and proposed major transportation elements such as highways and freeways, ground rapid transit systems, and ground facilities associated with airports. Appendix D discusses what noise is, how it can damage the ear and cause other ailments, describes ambient noise and single event noises, discusses how noise is being controlled by various agencies and what the local government role can be, and explains why projection of noise levels for the future is impractical.

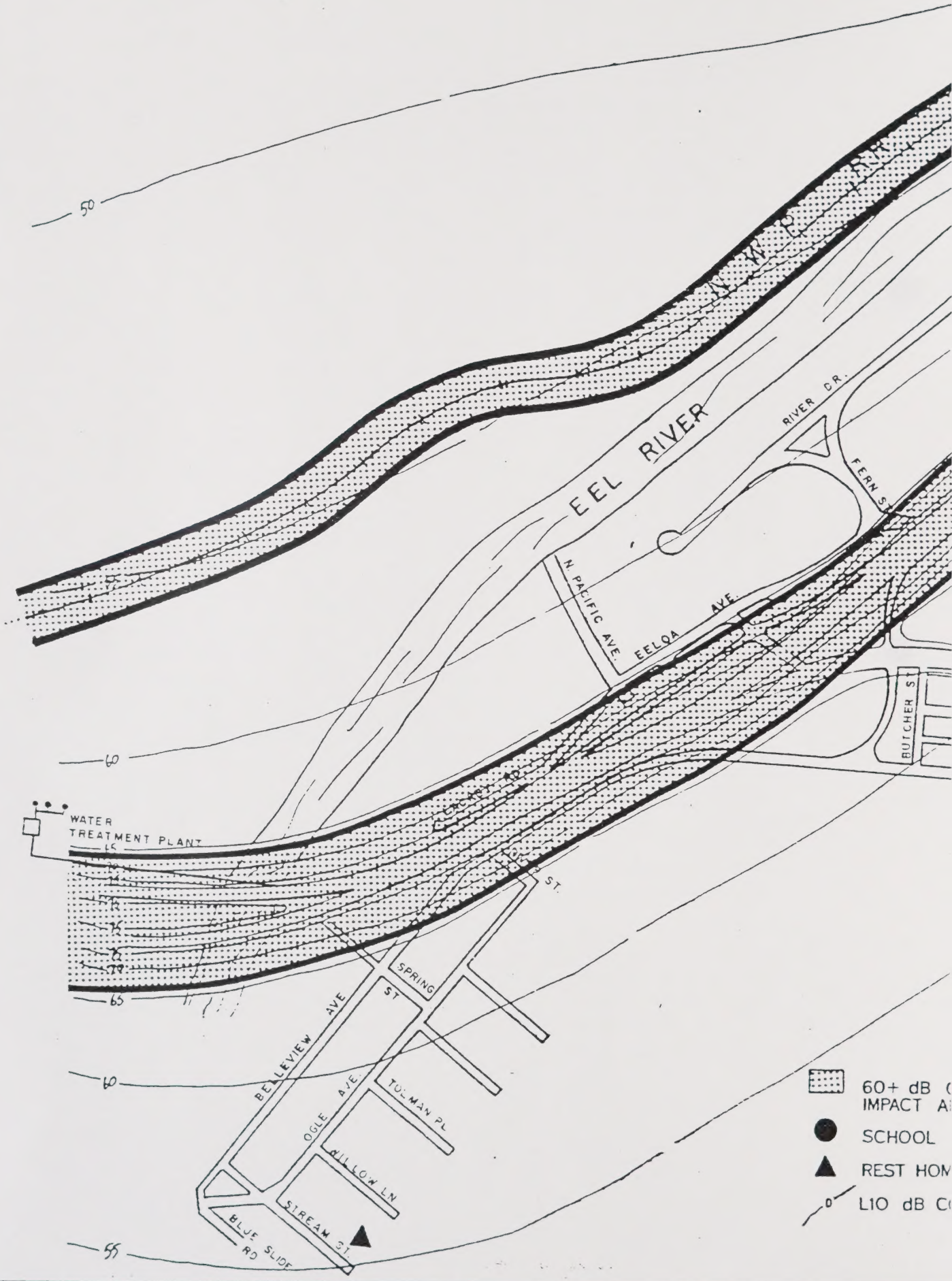
State Highway 101, which is routed along Wildwood Avenue through the Rio Dell business district, and the railroad, which is on the far side of the river adjacent to the Scotia Bluffs, are the two transportation elements within the Rio Dell Planning Area. Only a few trains pass through the planning area each day and are therefore considered single event noises.

Single Event Noises. Logging and diesel delivery trucks generate the most common single event noises in the planning area. At 50 feet a truck generates a noise level of 88 decibels and at 100 feet the level is 82 decibels. Businessmen along Wildwood Avenue commented on the noise generated by trucks, noting that it sometimes interrupted conversation. It is also noticed by residents within a few blocks but is not considered disturbing.

When questioned on the train noise, residents indicated that it was noticeable but not objectionable, and several mentioned that the sound was rather pleasing. The whistle at the Pacific Lumber Company mill in Scotia is also noticeable but is apparently considered the community clock, similar to the noon fire horn in other communities. Several people commented that the whistle had recently adopted a rather erratic tone which they felt was a pleasant variation that should be retained. Use of motorcycles along the river banks, and on the hillsides to the west were noted as objectionable single event noises.

Trucks and trains travel defined corridors, and therefore their noise impacts are geographically defineable. Other sources which generate noises of above 75 decibels, such as chain saws, lawn mowers, barking dogs, and motorcycles occur at various times and in scattered locations, and their impacts are less predictable, although common.

Single event sounds in the 75 to 85 decibel range are distracting to most people and sounds over 85 decibels are often disturbing and can cause hearing loss if exposure is frequent. For persons inside a building, these noise levels would be perceived at about 10 decibels less with the windows open and 20 decibels less with them closed.


EEL RIVER
N. W. P. R.R.
RIVER DR.
FERN ST.
N. PACIFIC AVE.
EELOA AVE.
BUTCHER ST.
WATER TREATMENT PLANT
ST.
SPRING ST
BELLEVIEW AVE
OGLE AVE.
TOLMAN PL
WILLOW LN
STREAM ST.
BLUE SLIDE RD
50
60
65
55
60+ dB
IMPACT A
SCHOOL
REST HOM
L10 dB C

RIO DELL
GENERAL PLAN

Daytime Ambient Noise Levels

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APPROX. SCALE: 1"=650' | PLATE NO.

Ambient Noise. Highway 101 is traveled by approximately 8,500 vehicles per day. This volume of traffic generates a high level of sound due to the constant presence of vehicle noise. For example, at 50 feet a steady stream of automobiles passing by generates a noise level of about 70 decibels. If trucks, motorcycles and some autos with worn mufflers are included in the traffic mix, the noise level can increase 5 to 10 decibels. Using the methodology described in the appendix, and the noise contour data supplied by the State Department of Transportation for the existing Highway 101 and the future freeway, a daytime ambience contour map has been prepared for the planning area (See Plate 4). This map assumes that the freeway is operational and that the traffic level on Wildwood Avenue has been reduced considerably. Although this does not portray current noise conditions accurately, it was felt that for planning purposes the freeway should be taken into consideration. Nighttime ambience levels will be about 10 dB(A) lower than indicated on the map.

Portions of the freeway will be depressed, and at interchanges and river crossings the freeway will be above grade. In the depressed areas the sloped banks will project the sound above nearby land uses and the effect will be less noise than if the freeway were at grade. At the elevated locations the sound will also project out over adjacent land uses but some sounds will be directed toward the ground with the net effect being slightly less sound than experienced at grade level locations. These fluctuations cannot be qualified until field measurements are taken. However, ambient noise levels throughout the planning area and adjacent to the freeway should be within acceptable levels as identified in Appendix D with the possible exception of residential areas within 300 feet of at grade or above grade sections of the freeway. Once the freeway is opened, the noise levels on Wildwood Avenue will decrease at least 10 decibels.

Since much of the land near the new freeway is still undeveloped, an excellent opportunity is available to use careful land use planning to minimize the noise impacts of the freeway. A recently adopted State regulation (Title 25 Article 4 of the California Administrative Code) supports such an effort. Essentially it provides that when hotels, motels, or multiple family residences are constructed near highways that special noise reduction methods must be employed to ensure that noise levels inside the buildings are appropriate (see Appendix D for details). The area affected by this provision lies within the 60 dB(A) community noise equivalent level contour. This contour line is shown on Plate 4. This regulation does not cover single family residences or recreational vehicle parks. Although adding sound insulation is not practical for mobile homes and recreational vehicles and is costly in single family dwellings, noise impacts can be reduced for these types of accomodations through careful orientation of the units, use of fences, or other sound reduction techniques, or by requiring their location outside the 60 CNEL impact area.

The shift of traffic over to the freeway will offer the community the opportunity to redefine traffic and land use relationships along Wildwood Avenue with the possibility of increased parking and creation of a more comfortable shopping environment.

Environmental Assessment. The impacts of implementing the following recommendations are generally indirect and restricted to the social and economic categories of the environmental impact assessment process. In general, the impacts are considered long term and beneficial. There is a possibility that improving the quality of life through noise abatement and related planning effects will increase the attractiveness of the community as a residential area for commuters, for retired persons, or for some other segment of society and thus have a growth inducing aspect. Implementation of the recommendations will have no unavoidable, direct, adverse impacts nor call for any irretrievable commitment of resources or expenditure of energy. Since it takes large amounts of energy to generate noise, noise reduction has a beneficial energy conservation impact. Appendix D includes a discussion of the social, economic, and environmental impacts of noise in general.

Recommendation #1. The Rio Dell Planning Commission should review the implications of the noise reduction requirements of the State Administrative Code on the existing Land Use Plan and current zoning classifications within the 60 CNEL contour line. Uses that can economically incorporate sound proofing and other noise reduction techniques should be given preference. Where single family dwellings or recreational vehicle parks are permitted within this noise impact area the Planning Commission should encourage the developer to use all practical means to ensure that the noise level in sleeping areas will be within the acceptable limits.

Environmental Assessment. Extensive changes in the land use plans will have to be accompanied by a separate and detailed environmental assessment. Changes in land use regulations in an established community often affect the development plans of land owners. When proximity to noise corridors is used as reason to preclude residential uses, other alternative land uses of realistic potential must be permitted if adverse impacts on property value are to be avoided. Another alternative is public ownership of the noise impacted area.

Recommendation #2. The Planning Commission should consider the impacts on nearby residential areas associated with potential commercial development at the freeway interchanges. Commercial uses and related noise levels should be kept to a minimum on the east side of the freeway. On the west side, commercial uses should be clustered on large parcels where buildings and parking areas can be oriented in a manner which minimizes noise impacts on nearby residential areas. Buffering of commercial areas with multiple family development (where noise mitigating features can be incorporated in the building design) should be considered along Davis Street between Wildwood Avenue and the commercial area at the freeway interchange, and adjacent to the commercial area on the north and south. With additional commercial zoning provided at the freeway interchanges, it may be possible to reduce the area of commercial zoning along Wildwood Avenue to avoid further strip commercial development in the area.

Recommendation #3. If vehicular noise such as motorcycles and improperly muffled automobiles are a noise problem, the city should contact the California Highway Patrol and develop a program to improve enforcement of the State Vehicle Code noise regulations. (See Appendix D for discussion of State Vehicle Code regulations).

Environmental Assessment. Such a program will require the commitment of manpower, energy and equipment. The community will have to decide when the problem has reached the point where such a commitment is necessary.

Recommendation #4. If non-vehicular noises are a problem, the city should consider adopting a noise ordinance. A decibel meter for use by the local enforcement officer should be purchased if the ordinance is adopted. A section covering animal noises can be added if this problem is considered significant. (See Appendix D for reference to model noise ordinances).

Environmental Assessment. Implementation of this recommendation will not have any direct impact upon the community resources but will give the authorities a mechanism for quickly and effectively mitigating the impacts of an unwanted noise. Offenders will react unfavorably to a supposed infringement of their personal license to do as they please. Some social friction can be expected from the enforcement of this recommendation.

Recommendation #5. The Rio Dell School District should develop an educational unit on noise and include it in the teaching program at the appropriate age level. Educating the next generation to the hazards of excessive noise is one of the most important weapons in the fight against deafness and increased noise pollution.

APPENDIX D

TECHNICAL CONSIDERATIONS IN THE NOISE ELEMENT

When energy is expended it causes vibrations in the air, water, land or man-made objects. These vibrations are transmitted through the air and are perceived by the ear as sound. The frequency of the vibrations can vary considerably - short frequencies produce high pitched sounds and long frequencies generate low pitched sounds. The undamaged human ear is capable of detecting many but not all tones. Certain animals are noted for being able to hear higher pitched sounds than humans.

The human ear does not respond equally to sounds of different pitches. Moderately high sounds, such as those produced in the uppermost register of a piano are heard better than either very high or very low pitches. If the ear were as sensitive to the lower end of the register as it is at the higher end, sounds like the roaring of the wind, or the beating of the heart would be unbearably loud. High pitched sounds such as the scratching of a fingernail on a blackboard are the most disturbing.

The intensity or loudness of sound is related to the amount of energy utilized in generating the vibrations. The more energy expended the louder the sound seems, and bombarding the ear with very loud sounds for extended periods can cause physical deterioration of the delicate parts of the ear mechnaism. The combination of high pitch and extreme loudness is the most damaging.

The effects of noise are insidious because they are undetectable by the victim until after irreversible damage has occurred. It is possible to sustain noise levels sufficient to produce permanent hearing impairment without any accompanying sensation of pain. The only symptom of the damage is a need on the part of the victim for a progressively higher noise level to produce the original stimulus to the brain. Thus noise confers a "tolerance", like a narcotic, but in the form of progressive deafness.

The ear is able to adjust somewhat to loud noises, but not sufficiently to cope with the constancy and loudness experienced in industrialized societies. Two limitations of the ear are its delayed adjustment to sharp sounds and its inability to withstand continued loud noise for extended periods of time. When the ear first perceives a loud sound it takes about .2 seconds for it to adjust and turn down the volume. During this moment when the sound is not dampened serious damage can occur. Someone who had a firecracker explode 15 inches from his ear showed permanent hearing loss. During extended periods of loud noise the ear, like an automobile in an endurance race, begins to disintegrate due to the constant vibration.

The results of two studies substantiate the impact of noise in our society. Recently a study of more than 4,000 Tennessee college students showed that 33% failed the screening test on higher frequency tones. The following year the number failing rose to 61%. This loss was attributed to high-intensity recreational noise, such as live amplified music, sport shooting, motorcycling, etc. A study in 1962 of the Mabaan tribe in the Sudan showed that older

members of the tribe have hearing acuity comparable with that of young children in America.

Besides physical damage to the ear, noise produces stress on other parts of the body. To quote the Environmental Protection Agency Publication EPA-335: "Even a sound of moderate volume and short duration such as a heavy truck passing on the other side of the street (rated about 80 decibels), produces a remarkable number of physical changes. Blood vessels in the brain dilate while blood vessels in other parts of the body constrict. Blood pressure rises, and the heart rhythm changes. The pupils of the eyes dilate. The blood cholesterol level rises. Various endocrine glands pour additional hormones into the blood. Even the stomach changes its rate of acid secretion. While most of these reactions are only temporary, the modern environment presents such ever-changing noise levels that some of the 'temporary' effects become chronic".

In addition to the physiological impacts on the ear and the body there are the psychological reactions: frustration when noise interrupts conversation, or hampers concentration on work, or makes it difficult to relax and obtain needed rest. Although suffering from noise cannot be weighed only in economic terms, the cost of accidents occurring because the victim failed to hear the approaching danger, or arising from work inefficiency due to noise, or from treatment of related physical maladies must be staggering. If, as some experts claim, urban noise levels have been increasing by an average of 1 decibel per year for the past 30 years it becomes obvious that noise must be controlled and reduced wherever possible.

Defining Noise. Noise has been defined as unwanted sound. However, this definition does not give proper consideration to the tolerance of noise resulting from ear damage or the many imperceptible but undesirable effects of noise. Therefore it may be better to define noise as excessive sound.

In order to determine which sounds are excessive some means of measuring it are necessary. The unit of measurement most commonly used is called the decibel (dB) and is very near the "just perceptible difference" in loudness in the human ear. Since it takes a tremendous increase in energy to increase the loudness of sound the decibel scale is logarithmic - a sound measured at 40 decibels requires ten times as much energy as a sound at 30 decibels. The scale most commonly used is the A-weighted decibel scale which suppresses the bass response to better correspond to the response curve of the human ear. Figure 1 gives some typical examples of various decibel levels generated by familiar noise sources.

Ambience and Single Events. When measuring sound, it is possible to differentiate between what is termed the ambient sound level and louder peak noise levels generated by single events such as a passing truck. Essentially ambience is the undifferentiated background noise which is the resultant of thousands of events, either small or distant, which in combination constitute a steady accompaniment to the sound being measured. Ambiences of above 60 dB(A) are almost exclusively generated by heavily traveled streets and highways with an average daily traffic count of more than 2,000 vehicles.

FIGURE I

COMMON INDOOR AND OUTDOOR NOISE LEVELS

COMMON OUTDOOR NOISE LEVELS	NOISE LEVEL dB(A)	COMMON INDOOR NOISE LEVELS
	-110	Rock Band
Jet Flyover at 1,000 feet		
	-100	
Gas Lawn Mower at 3 feet		Inside Subway Train (New York)
	-90	
Diesel Truck at 50 feet		Food Blender at 3 feet
Noisy Urban Daytime	-80	Garbage Disposal at 3 feet Shouting at 3 feet
Gas Lawn Mower at 100 feet	-70	Vacuum Cleaner at 10 feet
Commercial Area		Normal Speech at 3 feet
	-60	
		Large Business Office
Quiet Urban Daytime	-50	Dishwasher Next Room
	-40	Small Theatre, Large Conference Room (background)
Quiet Urban Nighttime		
Quiet Suburban Nighttime		Library
	-30	
		Bedroom at Night
Quiet Rural Nighttime		Concert Hall (background)
	-20	
		Broadcasting and Recording Studio
	-10	
		Threshold of Hearing
	-0	

Source: "Guide on Evaluation and Attenuation of Traffic Noise", American Association of State Highway and Transportation Officials.

NOTE: A ten (10) decibel increase in sound level on dB(A) scale doubles the apparent loudness or annoyance of the sound.

An airplane landing at an airport, a truck traveling along a low traffic volume street, a motorcycle climbing a nearby hill are examples of single event noises. Such loud events stand out above the general ambience level and can be disturbing, startling, distracting, and even damaging to the ear if experienced repeatedly at close range. At 50 feet a diesel truck generates single event maximum of approximately 85 decibels, a diesel train - 88 decibels, a power lawn mower between 59 and 85 decibels depending on make, and a chain saw - 64 to 86 decibels. The operators of lawn mowers and chain saws are exposed to noise levels of 80-95 decibels and 103-115 decibels respectively ("Effects of Noise on People", Environmental Protection Agency).

Inventory Methodology. The estimates of ambience in the vicinity of major highways were developed by the California Department of Transportation utilizing a concept called L10, which can be defined as that noise level which will not be exceeded more than 10 percent of the time during the peak hour of traffic. Where traffic counts on county roads exceed 2,000 vehicles L10 data have been developed to supplement the State Highway information. The contours from 60 to 45 dB(A) were extrapolated from the highway data and checked by random field measurements.

These data do not consider variations due to buildings, barriers, or vegetation. Some adjustment has been made where major topographical features affect sound dispersion over significant stretches of highway; otherwise, terrain variations have not been considered. Contours are subject to an error range of plus or minus 3 dB(A). All field measurements were taken on a General Radio Sound Level Meter, type 1551B.

In addition to the L10 contours the 60 decibel Community Noise Equivalent Level (CNEL) contour has been supplied on the ambience map (Plate 4). This is a noise measurement which gives added weight to the noises occurring during the evening (3x) and nighttime (10x). This weighting reflects the relative increase in levels of annoyance. Although this methodology (developed by Wiley Laboratories) has been widely used near airports, it has only recently been employed to report noise levels near highways and railroads. In order to determine the 60 CNEL contours, nomographs developed only recently were used. Required data were not available in a few instances and best estimates had to be employed. When better data and more experience with this methodology has been obtained, it should be possible to develop a complete set of CNEL ambience contours for the planning area. For the purpose of implementing the State Administrative Code requirements, the CNEL 60 line shown on Plate 4 is adequate (see discussion below).

Noise Control. There are several ways in which noise can be controlled. Redesign of equipment and use of sound absorbing materials has been effective. Where dampening the sound at the source is impractical or technologically infeasible

protective devices for the car have proven effective if the number of people exposed to the noise is limited. New techniques are being used to reduce sound transmission through the walls of residences. And, in some cases sound barriers or just increased distance between the source and observer have been used. Any of these can be encouraged or required by federal, state, or local governments through the adoption of standards, guidelines, and ordinances.

The Department of Transportation has adopted federal standards which are generally applicable to highway design in the state of California. These standards relate the L10 noise levels to four general land use categories and represent the highest desirable noise level conditions.

FEDERAL HIGHWAY DESIGN STANDARDS

Land Use Category	Design Noise Level (L10)
A. Unique and unusual tracts of land in which serenity and quiet are of extraordinary significance and preservation of those qualities is essential if the area is to continue to serve its intended purpose.	60 dB(A) (Exterior)
B. Residential areas, schools, churches, libraries, hospitals, and so forth.	70 dB(A) (Exterior)
C. Other developed land not included in (A) and (B) and generally constituted by urbanized business or industrialized areas.	75 dB(A) (Exterior)
D. Special condition site, areas, or activities. The design noise level should be established, based on the merit of the specific case and an analysis of the acceptable level.	(Exterior or Interior)

These same standards also identify the impact of noise on various types of buildings and window openings. The factors indicated in the table below are used in highway design to ensure that the noise level inside adjacent buildings does not exceed 55 dB(A).

Building Type	Window Condition	Noise Reduction Due to Exterior of the Structure
All	Open	10 dB(A)
Light frame	Ordinary Sash	20 dB(A)
	(closed with storm windows)	25 dB(A)
Masonry	Single Glazed	25 dB(A)
Masonry	Double Glazed	35 dB(A)

The Department of Housing and Urban Development has also established noise level standards which are utilized by HUD and FHA in approving financing of residential housing. They are:

General External Exposures dB(A)

1. Unacceptable:
   a. Exceeds 80 dB(A), 60 minutes per 24 hours
   b. Exceeds 75 dB(A), 8 hours per 24 hours

2. Discretionary, Normally Unacceptable:
   a. Exceeds 65 dB(A), 8 hours per 24 hours
   b. Loud repetitive sounds on site

3. Discretionary, Normally Acceptable: Does not exceed 65 dB(A) more than 8 hours per 24 hours

4. Acceptable: Does not exceed 45 dB(A) more than 30 minutes per 24 hours.

The U. S. Government also has jurisdiction over all noises occurring under conditions of employment, even if interstate commerce is not involved. The maximum level for an eight hour day is presently 90 dB(A) but consideration is being given to reducing this level. While most people agree that this level is too high the cost to employers of reducing the level to 85 decibels is considerable. These regulations are administered by the Occupational Safety and Health Administration. Another program is the efforts of the Environmental Protection Agency. It works with manufacturers of equipment and appliances to develop designs that generate less noise. Noise level standards have been adopted in several categories to encourage progress in noise reduction.

The State of California Vehicle Code establishes maximum decibel levels for all vehicles based on the year of their manufacture. These requirements are projected into the future and gradually reduce the permissible noise level as illustrated below:

Year of Manufacture	Maximum Noise Level in Decibels (dBA)	
	Automobiles	Vehicles Over 6,000 Pounds
1968 - 72	86	88
1973 - 74	84	86
1975 - 77	80	83
1978 - 87	75	80
after 1987	70	70

The Vehicle Code (Section 27151) makes it unlawful to operate a vehicle which is emitting noise levels above those applicable when it was first sold. Off-road vehicles are subject to established dB(A) levels also, but they are exempt if used only on the owner's property. Enforcement of off-road noise violations is hampered because Highway Patrol vehicles are not equipped to engage in off-road pursuit.

The state has also adopted "Noise Insulation Standards" (see Chapter 1, Article 4 of Title 25 of the California Administrative Code). Their purpose is to "establish uniform minimum noise insulation performance standards to protect persons within new hotels, motels, apartment houses, and dwellings other than detached single family dwellings from the effects of excessive noise...".

Requirements for interior airborne sound insulation and impact sound insulation are established for wall and floor-ceiling assemblies utilizing the sound insulation ratings incorporated in the Uniform Building Code.

For exterior noises the requirement specifies that with windows closed, the community noise equivalent level (CNEL) attributable to exterior sources shall not exceed an annual CNEL of 45 dB in any habitable room. An acoustical analysis of the proposed design is required when the proposed structure will be located within the 60 dB CNEL contour line around any airport, the select system of county roads and city streets, freeways, state highways, railroads, rapid-transit lines and industrial areas. Suggested means of noise reduction include orientation of the structure, set-backs, shielding, and sound insulation of the building.

Noise also can be subject to the nuisance laws of the state (state penal code) or a city. These codes require that the plaintiff demonstrate that the offending noise constitutes a nuisance. Because the burden of proof lies on the plaintiff and involves the time and expense of a jury trial, this method of control is seldom used. To facilitate legal recourse for private parties many cities have adopted noise ordinances which establish criteria for determining when a noise constitutes a violation. When a violation is recorded, usually in response to a complaint to the local police department, the violator can be cited and the police department handles the prosecution.

The League of California Cities model noise ordinance is a typical example. It regulates: (1) noises generated by radios, television, amplifiers and similar audio transmitters between the hours of 10 p.m. and 7 a.m., (2) equipment such as air conditioners and fans, (3) restricts construction activity within 500 feet of a residential zone; and, (4) makes it unlawful to generate disturbing noise near posted institutions such as schools, hospitals and churches.

Two basic problems have evolved in the administration of noise ordinances. First, although attempts have been made it has proved difficult to develop ordinance provisions for some types of noise, such as noise created by animals, special events, etc. In many cases only a small percentage of the potential noise sources are actually covered and this limits the effectiveness of the ordinance in controlling overall noise levels. Further, it means that some types of noise are treated more strictly than others because of administrative problems.

Secondly, measurement of noise levels is a technical task requiring fairly sophisticated equipment and technique. If the enforcement officers are not well trained the courts may dismiss the evidence as inadequate to support the charges. Another related difficulty is insuring that the noise level recording is an accurate representation of the offending noise. In fact,

the presence of other noise in the area can distort the recorder reading and in effect suggest a noise level higher than actually attributable to the specific noise source. Blowing of the wind, falling rain, or a barking dog - almost any noticeable noise will affect the readings and the operator must be aware of this and be able to compensate - or the evidence will be inaccurate. In spite of these limitations noise ordinances are still the best local means of attempting to control noise on a community-wide basis.

Land Use Classification Standards. Noise ordinances are based on ambient standards for general land use categories. The model noise ordinance includes standards recommended by the League of California Cities and another set (about 5 decibels higher) recommended by the Pacific Gas and Electric Company. The standards listed below were developed from the HUD standards reported above. Essentially they are slightly higher than the PG&E recommendations. These standards were used in evaluating ambient noise problems in the community and are recommended for adoption as the official standard. They can be incorporated in any noise ordinance that might be considered and used in reviewing zoning issues and environmental impact reports.

Land Use Classification	Desired Ambient Level, dB(A)	
Residential, rural-suburban	night	less than 40 - 45
	day	less than 45 - 50
Residential, suburban	night	less than 45 - 50
	day	less than 50 - 55
Residential, low-density urban	night	less than 50 - 55
	day	less than 55 - 60
Residential, medium/high density	night	less than 55 - 60
	day	less than 60 - 65
Commercial zones, districts	night	less than - 65
	day	less than - 70
Industrial zones, districts		less than - 75

It is evident that most of the noise control effort is being exerted at the state and federal levels where it undoubtedly has the widest impact. Control of noise related to motor vehicles, aircraft and railroad equipment is pre-empted by federal and state agencies. However, efforts to improve enforcement at the local level may be necessary. Otherwise there is little that can be done about such noise problems by local government.

At the local level noise reduction can be achieved in the design and location of local roads, the routing of local bus systems, the designation of truck routes, the separation of noisy commercial and industrial activities, outdoor assembly areas, and airports from residential areas, the provision of increased setbacks for dwellings along busy streets and through careful orientation and construction of dwellings.

Many of these situations are controllable through the zoning and subdivision ordinances. Others are public projects where consideration of noise impacts would be included as part of the environmental impact report. Noise impacts

must also be covered in environmental impact reports for large private developments and this enables the city and other affected agencies to consider ways to reduce noise impacts at the design stage. The standards included in the Noise Element of the General Plan provide a valuable yardstick in reviewing development proposals. A noise ordinance such as the model discussed above is another local option aimed at reducing noise levels.

Future Noise. Our society has become very tolerant of excessive sound and only in the last 10 years have serious efforts been undertaken to reduce noise pollution. The efforts by agencies at the federal, state, and local levels summarized above are having an effect. Public concern over preserving the "quality of life" is growing and this should sustain the momentum achieved unless the cost to the social and economic sectors of our society becomes unacceptable. The trend is toward quieter equipment and appliances. Limitations on fuel supplies will dampen the projected increase in usage of the automobile. And, young people may become aware of the ear damage potential in loud music and turn the volume down. On the other hand noise reduction efforts may be counteracted by an increase in the number of noise generating devices.

The impact of educational programs, noise reduction programs, and the social and economic condition of our society will all have a bearing on how much noise reduction will be accomplished. Because it is difficult to predict the outcome in any of these areas it is almost impossible to adequately support any projection of future noise levels. Therefore, no specific projection of ambient noise levels has been attempted. It is likely that the rate of increase in noise levels will be reduced, but noise levels will probably continue to increase in the future.

The State Department of Transportation has prepared L10 noise contours for state highways in the planning area for 1995. These contours are available at the local public works department. These projections were based on traffic flow estimates derived in 1973 - before shortages in fuel supplies and higher costs began having an impact on driving habits. Once these projections have been adjusted based on more recent experience more realistic long range noise projections will be possible, although their accuracy and consequent value as a planning tool will still be in question for the reasons cited above.